

## CLAIMS

What is claimed is:

1. An acetabular cup assembly comprising:  
  
a liner;  
  
a shell; and  
  
means for retaining the liner in the shell, the means for retaining including a spherical profile thread spiraling around a portion of each of the shell and liner.
2. The acetabular cup assembly of claim 1 wherein the liner includes a liner screw thread having a spherical profile thread crest and a spherical profile thread root.
3. The acetabular cup assembly of claim 1 wherein the liner includes a liner screw thread having a spherical profile thread crest and a conical profile thread root.
4. The acetabular cup assembly of claim 1 wherein the liner includes a liner screw thread having a spherical profile thread crest and a cylindrical profile thread root.
5. The acetabular cup assembly of claim 1 wherein the liner includes a liner screw thread having a conical profile thread crest and a spherical profile thread root.
6. The acetabular cup assembly of claim 1 wherein the liner includes a liner screw thread having a cylindrical profile thread crest and a spherical profile thread root.
7. An acetabular cup assembly comprising:  
  
an acetabular liner having a generally hemispherical body with a face on one side of the body and a convex back side opposite the face, the back side having a polar region, a concave bearing surface extending into the body through the face toward the polar region, the back side including a liner screw thread

- having a liner thread root and a liner thread crest spiraling around the back side, the liner thread crest having a spherical profile; and
- an acetabular shell including a concave mating surface, the concave mating surface including a shell screw thread engageable with the liner screw thread, the shell screw thread having a shell thread root and a shell thread crest.
8. The acetabular cup assembly of claim 7 wherein the liner thread root has a spherical profile and the shell thread crest has a corresponding spherical profile.
  9. The acetabular cup assembly of claim 7 wherein the liner thread root has a conical profile and the shell thread crest has a corresponding conical profile.
  10. The acetabular cup assembly of claim 7 wherein the liner thread root has a cylindrical profile and the shell thread crest has a corresponding cylindrical profile.
  11. The acetabular cup assembly of claim 7 wherein the shell thread root has a spherical profile for receiving the liner thread crest.
  12. The acetabular cup assembly of claim 7 wherein the liner thread and shell thread comprise a self-locking arrangement in which a portion of the shell thread profile differs in a dimension from a corresponding portion of the liner thread profile such that upon screwing of the liner into the shell the portions interfere with one another.
  13. A hip prosthesis system comprising:  
  
an acetabular liner having a generally hemispherical body with a face on one side of the body and a convex back side opposite the face, the back side having a polar region, a concave bearing surface extending into the body through the face toward the polar region, the back side including a liner screw thread

- having a liner thread root and a liner thread crest spiraling around the back side, the liner thread crest having a spherical profile; and
- an acetabular shell positionable in an acetabulum, the shell including a concave mating surface, the concave mating surface including a shell screw thread engageable with the liner screw thread.
14. The system of claim 13 further comprising a femoral prosthesis including a stem portion and a head portion, the head portion being matingly engageable with the concave bearing surface of the acetabular liner.
15. The system of claim 13 further comprising bone cement positionable between the shell and acetabulum to fix the shell in the acetabulum.
16. A method of making an acetabular cup assembly, the method comprising:
- forming an acetabular liner having a generally hemispherical body with a face on one side of the body and a convex back side opposite the face, the back side having a polar region, a concave bearing surface extending into the body through the face toward the polar region, the back side including a liner screw thread having a liner thread root and a liner thread crest spiraling around the back side, the liner thread crest having a spherical profile; and
- forming an acetabular shell including a concave mating surface, the concave mating surface including a shell screw thread engageable with the liner screw thread, the shell screw thread having a shell thread root and a shell thread crest.
17. The method of claim 16 wherein the liner thread crest and the shell thread root are each formed by programming a computer controlled machine tool to guide a cutter to follow a spherical profile as the liner and shell threads are formed.

18. The method of claim 16 wherein the liner thread root is formed by programming a computer controlled machine tool to guide a cutter to follow a conical profile as the liner thread root is cut.
19. The method of claim 16 wherein the liner thread root is formed by programming a computer controlled machine tool to guide a cutter to follow a cylindrical profile as the liner thread root is cut.
20. Method of attaching an acetabular liner to an acetabular shell, the method comprising:
  - providing an acetabular liner having a generally hemispherical body with a face on one side of the body and a convex back side opposite the face, the back side having a polar region, a concave bearing surface extending into the body through the face toward the polar region, the back side including a liner screw thread having a liner thread root and a liner thread crest spiraling around the back side, the liner thread crest having a spherical profile;
  - providing an acetabular shell including a concave mating surface, the concave mating surface including a shell screw thread engageable with the liner screw thread, the shell screw thread having a shell thread root and a shell thread crest; and
  - threading the liner into the shell such that the liner thread engages the shell thread and draws the spherical liner thread crest into engagement with the spherical shell thread root.